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(54) An ignition coil for the ignition
system of an internal combustion
engine

(57) An ignition coil for the ignition
system of an internal combustion
engine has a core (1) partially made
from soft iron sheets (2, 3, 4). A

portion (8) of the core is made from a
magnetically conductive material
whose Curie temperature lies between
0°C and 100°C, preferably at 50°C.
This results in increased induction
during cold starting, whereupon an
adequate amount of energy is made
available for an effective ignition
spark.

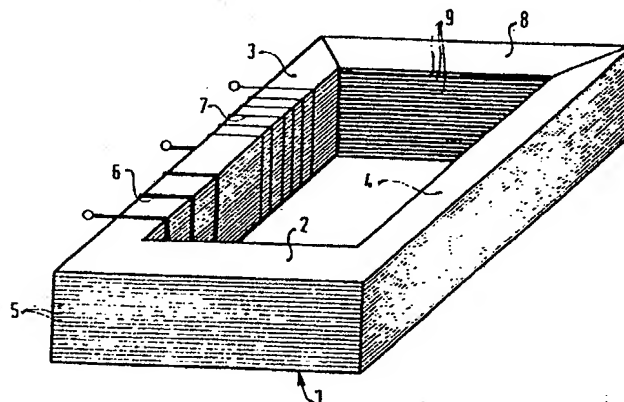


FIG. 1

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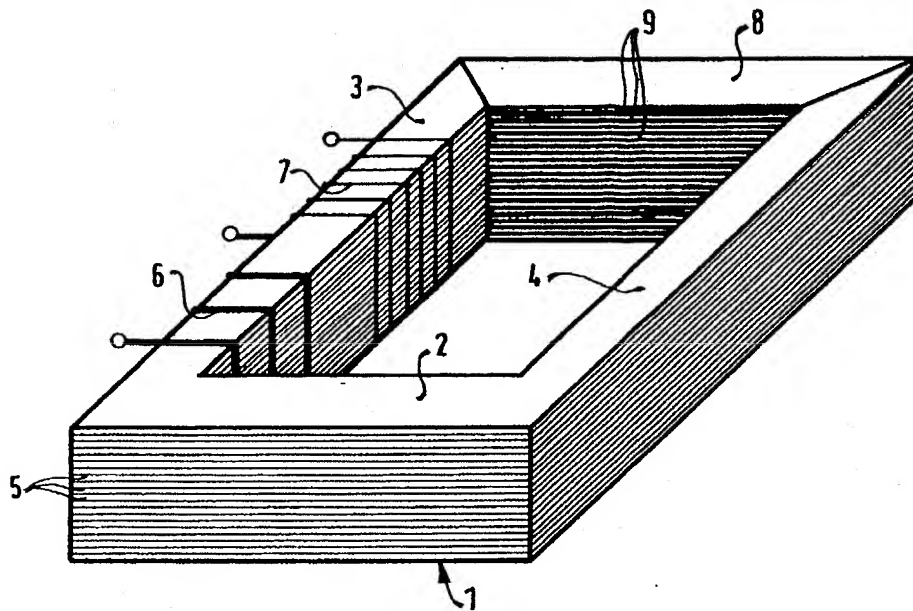


FIG. 1

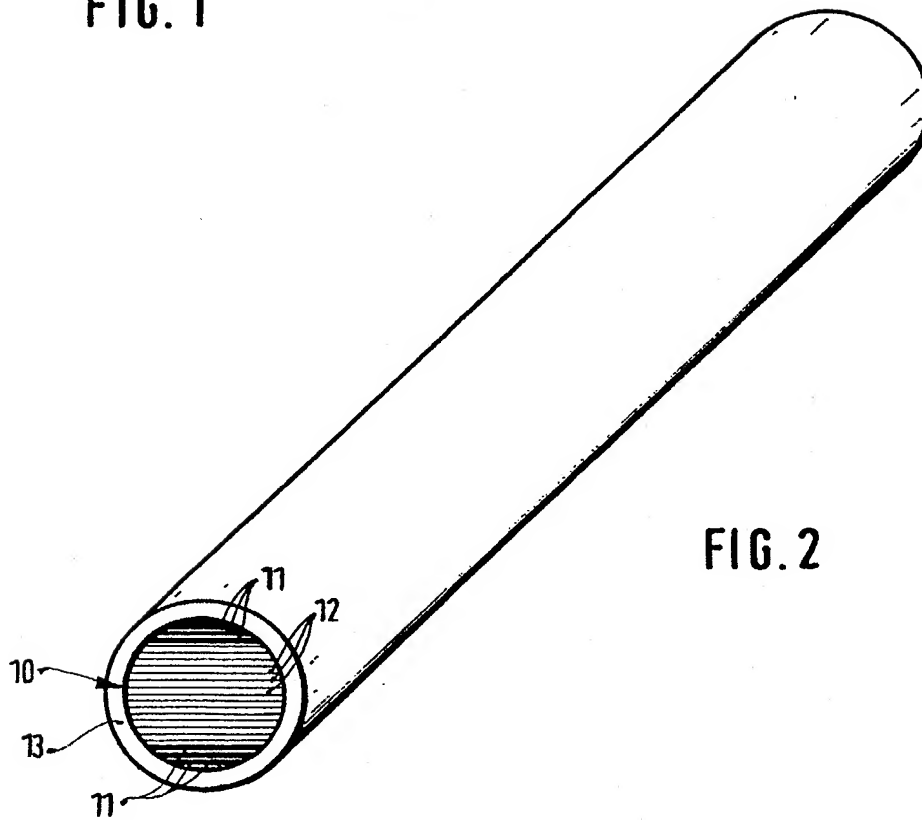


FIG. 2

SPECIFICATION

An ignition coil for the ignition system of an internal combustion engine

The invention relates to an ignition coil.

- 5 An ignition coil having a core made from soft iron sheet, is already known as described in German Patent Specification (Offenlegungsschrift) No. 2 745 990. When in use, the amount of energy stored may be too small to produce an effective ignition spark during cold starting, that is to say, when the temperature is low and the supply voltage is also low.

- 10 The present invention resides in an ignition coil intended for the ignition system of an internal combustion engine and having a core made partially from soft iron sheet, and partially from a magnetically conductive additional material whose Curie temperature lies between 0°C and 100°C.

- 20 An ignition coil is thereby obtained which has increased induction during cold starting until normal operation is attained and thus can also make available in this operating state sufficient energy for an effective ignition spark.

- 25 The invention is further described, by way of example, with reference to the accompanying drawings, in which:—

- Figure 1 is a perspective illustration of a U-I core for an ignition coil according to the invention, and

Figure 2 is a perspective view of a bar core for another embodiment of ignition coil in accordance with the invention.

- Referring to Figure 1, an iron core 1 is intended for an ignition system (not illustrated) of an internal combustion engine (also not illustrated). The core 1 has a first transverse yoke 2 which is the starting point for two parallel-extending longitudinal limbs 3, 4. The transverse yoke 2 and the longitudinal limbs 3, 4 are composed of laminations 5 made from soft iron sheet. The longitudinal limb 3 carries a primary winding 6 and a secondary winding 7, the windings 6, 7 being indicated only symbolically for the sake of simplicity of the drawing.

The longitudinal limbs 3, 4 are mitred at their free end faces and abut by means of these mitres against mitred end faces of a second transverse

- 50 yoke 8. The laminations 9 of which the second transverse yoke 8 is composed are shown by heavy lines, this being intended to show that, compared with the other core parts 2, 3, 4 which are made from conventional transformer plate, the laminations 9 are made from a magnetically conductive additional material whose Curie temperature should lie between 0°C and 100°C, preferably at 50°C. Manganese zinc ferrite is particularly suitable for this purpose.

- By virtue of the above-mentioned measure, during cold starting, the ignition coil in the first instance has excessive induction which then decreases after normal operation, and for this reason a sufficient amount of energy for an effective ignition spark is always stored in the case of low temperatures and the low supply voltage usually associated therewith.

- In the iron core 1 of Figure 1, a portion of the magnetic circuit is filled by the additional material, whereas, in the case of the iron core 10 of Figure 2, which is a bar core of circular cross section, partial cross sections are filled by laminations 11 made from additional material. The partial cross sections filled by the laminations 11 of additional material are of segmental configuration and supplement the cross section, filled by the laminations 12 of conventional transformer plate, to form a circular surface. The iron core 10 is held together by an insulating casing 13.

Claims

1. An ignition coil intended for the ignition system of an internal combustion engine and having a core made partially from soft iron sheet, and partially from a magnetically conductive additional material whose Curie temperature lies between 0°C and 100°C.
2. An ignition coil as claimed in claim 1, in which the Curie temperature of the additional material is about 50°C.
3. An ignition coil as claimed in claim 1 or 2, in which the additional material is a manganese zinc ferrite.
4. An ignition coil constructed substantially as herein described with reference to and as illustrated in the accompanying drawings.